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from under the front-central portion of the head-shield, and project forward. They are jointed and entirely analogous to the antennæ of living crustaceans in structure. In full or in stumps, they have been identified on upwards of fifty individuals, some twenty of which belong to Columbia College. On one specimen, where the cheeks have been broken away, Mr. Matthew has detected comb-like structures, which we suppose to be gills. Leg-like appendages are well preserved, opposite the divisions of the body.

At the posterior end of the pygidium, tetson-like appendages can be distinguished, which are of great interest, and which are regarded as perhaps indicating an ability in the animal to propel itself backwards, as does the lobster, although its ordinary motion would be forwards, by means of its legs. Mr. Matthew brings out some other interesting facts and deductions, which will be illustrated by drawings in the full paper. J. F. KEMP.

Columbia College, May 26.

Cedar Waxwing.

IN view of the articles published in your paper during the past few months regarding the plumage of the cedar waxwing (*Ampelis cedrorum*), it may be of interest to call attention to a paper published in the "Transactions of the Norfolk and Norwich Naturalists' Society," Vol. III., pp. 326-344 (read Nov. 2, 1881), by Henry Stevenson, in which there is a very full discussion of the plumage of the allied Bohemian waxwing (*Ampelis garulus*).

The presence of the wax-like tips in nestling birds is here recorded, and several captures of young in this plumage are referred to; the first nestling secured with red tips to the wing-feathers seems to have been taken by one of Mr. Wolley's collectors in Finnish Lapland in 1856.

WITMER STONE.

Academy of Natural Sciences of Philadelphia.

Native Lead.

IT may be of interest to mineralogists to note a new locality for native lead, which occurs near Saric, Sonora, Mexico, about 35 miles south of this place.

The metal occurs in thin scales; and pellets, like small shot, have been reported, but I have not seen them. The scales seem to approach a rectangular form, and have been found nearly an inch long.

The gangue rock is evidently a pyrocene, of pale-green color, streak yellowish. The accompanying minerals are iron oxides, with traces of manganese, and carbonate of lime.

C. W. KEMPTON.

Oro Blanco, Arizona, June 8.

The Ancient Egyptian Language.

IT is the growing opinion of scholars that the ancient Egyptian language has more intimate Semitic relationship than has been generally admitted. The grammatical construction of Egyptian is distinctly Semitic; the pronouns, prepositions, and other particles are traceable for the most part to Semitic roots; the Semitic system of pronominal suffixes is often used. Benfey sought to establish this affinity by various considerations, grammatical and lexicographical, and the conclusion to which he came was that the Semites are only one branch of a great family, which includes not only the Egyptian, but also the other languages of Africa. De Rougé, Ebers, and Brugsch have declared their belief in the descent of the Egyptian from the same stock as Semitic. Dr. Fritz Hommel, in his recently-published brochure, "Der babylonische Ursprung der ägyptischen Kultur" (Munich, 1892), brings forward many proofs showing the Semitic origin of the Egyptian language and writing. He not only specifies a number of identical words, but shows the grammatical relations of the two languages. He also puts side by side some thirty-five characters which resemble each other in the two languages, both in form and signification, and even in sound. Dr. Hommel maintains that Egyptian culture originated in Babylonia.

In this connection we may mention the interesting fact that the

Egyptian documents recently discovered in Palestine, rigorously transcribed in Hebrew characters, gave almost everywhere the regular Hebrew forms in the Bible, without change or correction.

CHAS. H. S. DAVIS.

Meriden, Conn.

Funnel-Shaped Clouds.

DURING the afternoon of May 17 there appeared not far northeast of Colorado Springs numerous cloud-masses resembling incipient thunder-storms. They were not so large as ordinary thunder-storms. From a cumulus mass depended the fringes that mark the storm-cloud, but they were unusually long as seen in profile at a distance. Only a little rain fell from any of them, and none from most of them. From the centres of several of them also depended funnels or narrow cones. In one case this column reached fully one-fourth of the angular distance to the ground, the others nearly as far. The columns changed their form somewhat, but I could not discover any marked swaying or writhing, perhaps owing to the fact that those observed were at a distance. At the time the surface winds were light and variable, but the following days have been marked by very violent winds. These were nearer the tornado than I ever before saw in Colorado.

G. H. STONE.

Colorado Springs, Col.

Glaciers in the United States.

AT this season of the year many scientists are preparing to visit and study the glaciers of Switzerland, that country being the Mecca of geologists who are converts to the glacial theories. I desire to call the attention of the readers of *Science* to the fact, that here in Pierce County, Wash., we have a system of glaciers surrounding Mount Tacoma, beside which those of Mt. Blanc are insignificant, both in area and distribution.

The glaciers of Mount Tacoma are eighteen in number, and are arranged in radial lines from the central dome of the mountain, which is 14,450 feet in altitude. As this mass rises from the sea-level, it is the most conspicuous peak in the United States. The limit of perpetual snow on the spurs is 4,000 feet, while the glaciers and snow-fields that lie in the cradles extend as low as 2,700 feet. With care, the glaciers and spurs are not overdangerous travelling. The scenery is superb, and well repays the many campers who yearly seek the mountain slopes for health and recreation. About fifty persons have attained the summit, including two ladies. The glacialist may there study moraines, terminal, medial, and lateral, and make observations on the flow of ice to his heart's content.

If any of your readers desire further information upon this subject, it may be obtained gratis by addressing

FRED. G. PLUMMER,

Secretary Washington Alpine Club, Tacoma, Wash.
Tacoma, Wash., June 1.

Binocular Vision.

Professor LeConte's remarks on my note about binocular vision seem to call for a word or two in addition from me. Of course I should not have troubled the readers of *Science* with my ways of looking at things, had I not known that they were unusual, and quite at variance with everything accessible to me on the subject, including Professor LeConte's own excellent little book, to which he makes reference, and had I not also been quite certain of the subjective part of the phenomenon. It is now about ten years since I noticed it first. Though a student of physics, I had not then read enough of physiological optics to have met with any thing on this subject, hence I had not been told what I must expect to see—a fact that I have no doubt is responsible for my unhappy deviation from established rules. Since that time I have tried the experiment under every available set of conditions—almost whenever I have found myself looking at any kind of a pattern. I have tried it with perfectly flat decoration, relief, and actual net-work, such as the bottom of a cane-seated chair, or a coarse wire-cloth, always with the same

result. The illusion is quite complete; I seem to be looking at an actual pattern. The use of a material point of regard, as the tip of the finger, was not, as Professor LeConte seems to have understood me, to aid in properly fixing the axes of the eyes, but simply to make sure on which side of the actual pattern the horopter lay — the all-important fact in the experiment. I may add, that in my case the coalescence of the images is easier with a more distant than with a nearer point of regard — contrary to Professor LeConte's experience. It seems to me that it would be valuable to secure some additional evidence as to the way in which the phenomenon strikes a person who has had no previous knowledge of its existence, say by using a stereoscope without lenses, fixing the distance of a point in monocular vision and then suddenly introducing a pattern, the observer being simply asked to estimate its distance. In closing, let me say that I lay no stress on my remarks in explanation of my own case. It really is more or less of a mystery, but it surely need not remain so. The abnormal eyes of Dalton did great things for the theory of color vision, and indeed it is from the abnormal more than from the normal cases that fruitful trains of thought are apt to take their rise. I esteem myself fortunate to have interested Professor LeConte, and I hope that this is by no means the last thought that he will give to the matter.

ARTHUR E. BOSTWICK.

Montclair, N.J., June 19.

A Night-Singing Cat-Bird.

PERHAPS it is not a rare occurrence, but I never heard of such a thing before, and I give the incident for what it is worth. A few evenings since I heard a cat-bird sing for nearly an hour just before midnight. The weather was mild, with not enough moonlight to cast a shadow. The bird's song was somewhat intermittent and scarcely so rapturous as his usual sunset or sunrise singing. In the intervals there occasionally came one or two of the mewing utterances characteristic of the bird.

A. STEVENSON.

Arthur, Ontario.

Is it a Paleolith?

A STONE axe has just been found in a field about eight miles northeast of this place, which very nearly proves (if not quite so) that man existed during, or prior to, the glacial period in North America. It was found by A. A. Newlin, on the summit-level in this (Parke) county, Indiana, on the south side of Sugar Creek. It is $6\frac{7}{16}$ inches long, $2\frac{1}{4}$ inches wide on the blade, $4\frac{3}{16}$ inches wide at the groove (or eye of our steel axes), $3\frac{1}{2}$ inches wide at the "back," or "poll," and is $1\frac{6}{16}$ inches thick, and, I am confident, was, when first made, nearly two inches thick.

One side is ground flat, and by glacial action, without any doubt. By that grind the groove was planed almost out on that side, and has been re-cut or filed out by some Indian long ages after the Indian who first fashioned the axe. The striations run from edge to poll, and the axe was moving edge forward, as the striations indicate, for they are deeper cut toward the edge, and weaker, become shallower and less distinct, toward the poll.

The opposite, or convex, side of the axe has been striated just enough to produce a distinct plane, which inclines to (or from) the flat side about eleven degrees.

The poll, the ends (as timber men call that part of the axe nearest to and farthest from the hand when using), the present convex side, and the grooves around the ends show the deepest and oldest weather-pits. Then the glaciated, flat side shows the next oldest weathering. Next, the newly-deepened groove on the flat side, and, also, a little deepening of the groove on the convex side, where the grinding had made the groove somewhat shallow, show the next oldest weathering; and, last, the smooth, whetted edge shows very little weather wear.

This axe was found about one hundred miles north of the southern boundary of the glacial drift on the Wabash River. I have found eleven places in the county where the rock, in place, is strongly and clearly glaciated, and three places have been found by other parties. The erratic boulders which are striated on one

to five sides are countless (to say nothing of those not marked), and I have examined them and studied them a great deal, and think I am not a bad judge of their comparative exposures and decompositions. As a result of my experience and judgment, I am strongly inclined to believe that this axe was made before, or during the glacier. That it was lost, or in some way fell into the sweep of the glacier and was ground flat on one side and striated a little on the other. That, after the glacier had receded, it was found, repaired, sharpened, and used till the steel tomahawk took its place, when it was cast aside. I feel confident that experienced archaeologists will so decide.

JNO. T. CAMPBELL.

Rockville, Indiana.

Cloud Formation.

I wish to call the attention of meteorologists to a rather peculiar phenomenon witnessed by me several times last winter.

The slough between King's River and the San Joaquin, overflows in seasons of high water, causing dense growths of tule (*Scirpus lacustris*, or round tule, and *Typha latifolia*, or flat tule), often ten feet high. The buccaroos of the large stock ranches burn the dead matter in winter, to clear the land that the stock may get the young feed.

On Jan. 28, at 3.30 p. m., I noticed one of these fires. The wind was northwest, slight, and quite warm; the weather had been showery for a few days previous, but, saving a few clouds of the cirrus type, the sky was clear. The fire was not extensive, but made a dense smoke which rose in a nearly perpendicular column, nearly 2,000 feet, when it met a counter current of air from over the Coast Range, as evidenced by its drifting abruptly away to the northeast.

All this is a natural result of the topography of the country; but what arrested my attention was a cloud of the cumulo-stratus type, resting on the top of the column at the point of flexure, like a cap. It did not appear to drift away, nor did it grow larger or diminish, save that from its base it gave off a cloud of the nimbus type, that mixed with the smoke and gradually increased and extended, till, at about 10 o'clock p. m., it extended across the northern horizon, like a dense rain cloud. Meanwhile, other clouds began forming at sunset, and it rained before morning.

On Jan. 29, it cleared away, another fire was started, the smoke rose in a column to the same altitude, struck the current, and drifted away, no cloud forming. The same thing happened on the 31st. On Feb. 1, the apparent conditions were the same, save a few clouds came in from the coast, but were soon dissipated. In the afternoon I saw the fire start, and watched it. The smoke rose as before, and struck the upper current of air. Immediately a cloud formed. In less than half a minute it had reached its usual size, as large as the column, which it seemed to cap. It was a dusty day, so the column was often broken. I saw it blown from under the cloud, and a new one form three times in about five minutes.

I now noticed that, whereas the smoke drifted down the wind, with its upper surface a horizontal plane, the liberated clouds ascended into the wind in the manner of a kite. Once outside the influence of the smoke, they were dissipated like the rest of the clouds. General showers prevailed throughout the valley for the next three days.

Reasoning from my limited knowledge of physics, I might think the cloud was caused by a column of heated and vapor-laden air rising with the smoke, and being cooled by coming in contact with the upper current, causing its vapor molecules to agglomerate into cloud particles; but, for various reasons, I think this inadequate. I have since seen the fires several times, with a southerly wind, which generally brings our rain, but no cloud formed.

I have seen a theory advanced that vapor molecules need some solid nucleus to start the process of agglomeration. Can any one tell if this be so, and, if it is so, the rank that carbon takes as a condenser?

I would also like to know why no cloud formed save in a "chronic" state of the weather; and finally, why did the liber-